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09/777,556	02/05/2001	Richard A. Barry	SYCS-008	8971

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EXAMINER	
LI, SHI K	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/777,556	BARRY ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 22-24, 30-32, 39 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Milton et al. (U.S. Patent 6,201,907 B1).

Milton et al. discloses in FIG. 1 a WDM network comprising a plurality of nodes. Milton et al. teaches in FIGs. 2 and 3 the concept of wavelengths bands and the structure of an optical node. Milton teaches in col. 5 lines 23-25 to drop and add channels from different bands.

Regarding claims 2-3, 23-24 and 31-32, Milton et al. drops and adds a fixed set of wavelengths which is predetermined and once the filter is installed, the set of wavelengths is independent of level of traffic at the node. For example, Milton et al. illustrates in FIG. 5 dropping and adding band X at node C.

3. Claims 1-4, 22-25, 30-33, 39 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Hutchison et al. (U.S. Patent 6,687,463 B1).

Hutchison et al. explains in FIG. 5 and col. 5, lines 45-22 the concept of wavelength bands. Hutchison et al. teaches in FIG. 9 an optical node for dropping and adding a fixed set of wavelengths from a plurality of bands. Hutchison et al. teaches to use the optical node in optical network such as those illustrated in FIGs. 4, 6 and 10.

Regarding claims 2-3, 23-24 and 31-32, Hutchison et al. drops and adds a fixed set of wavelengths which is predetermined and once the filter is installed, the set of wavelengths is independent of level of traffic at the node. For example, Hutchison et al. illustrates in FIG. 9 to drop and add the 1300 nm band and the AB band.

Regarding claims 4, 25 and 33, Hutchison et al. teaches in col. 1, lines 33-36 to provide wavelengths for future growth.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-10 and 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al. (U.S. Patent 6,084,694) in view of Farries (U.S. Patent 6,201,907 B1).

Milton et al. has been discussed above in regard to claims 1-3, 22-24, 30-32, 39 and 45. The difference between Milton et al. and the claimed invention is that Milton et al. suggests dropping a whole band of channels. Farries teaches in FIG. 7 that in certain applications only selected channels from each band need to be dropped. This gives flexibility in assigning wavelength to optical paths among a large number of nodes in a complex network. One of ordinary skill in the art would have been motivated to combine the teaching of Farries with the optical node of Milton et al. to only drop selected wavelength channels from a plurality of bands because this approach eliminates unnecessary equipment and reduce loss. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to drop only

selected channels from a plurality of bands, as taught by Farries, in the optical node of Milton et al. to only drop selected wavelength channels from a plurality of bands because this eliminates unnecessary equipment and reduce loss.

Regarding claims 6 and 8, if each band consists of four channels, i.e., λ_1-λ_4 constitute band A, λ_5-λ_8 constitute band B and λ_9-λ_{12} constitute band C, Farries teaches in FIG. 7 a fixed wavelength set comprises one wavelength from each band. Farries also teaches in FIG. 7 a fixed wavelength set comprises a first wavelength from band B and a plurality of wavelengths from band A.

Regarding claims 7 and 9, if each band consists of 7 channels, i.e., λ_1-λ_7 constitute a first band and λ_7-λ_{14} constitute a second band, Farries teaches in FIG. 7 a fixed wavelength set comprises two wavelengths from each band. Farries also teaches in FIG. 7 a fix wavelength set comprises multiple wavelengths from a plurality of bands.

Regarding claim 10, it is obvious to one of ordinary skill in the art to arrange the filters of Farries in a circuit pack so that it can be installed in a rack suitable to be deployed in the field.

Regarding claim 12, if each band consists of four channels, i.e., λ_1-λ_4 constitute band A, λ_5-λ_8 constitute band B and λ_9-λ_{12} constitute band C, Farries teaches in FIG. 7 to drop λ_1 from band A and λ_8 from band B.

Regarding claims 13-14, if each band consists of 8 channels, i.e., λ_1-λ_7 constitute a first band and λ_8-λ_{14} constitute a second band, Farries teaches in FIG. 7 to drop λ_1 and λ_4 from the first band and drop λ_8 and λ_{14} from the second band.

Regarding claim 15, the combination of Milton et al. and Farries teaches a method for dropping a fixed set of selected wavelength channels from a WDM signal using a set of cascaded thin-film filters.

Regarding claims 16-17, the combination of Milton et al. and Farries teaches drop channels and express (pass-through) channels.

Regarding claims 18-21, the combination of Milton et al. and Farries teaches that any channels can be selected from any bands by including filters with reflecting-band corresponding to the wavelengths of the channels.

6. Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al. and Farries as applied to claims 6-10 and 12-21 above, and further in view of Scobey et al. (U.S. Patent 6,389,188 B1) and Canoglu et al. (U.S. Patent 6,407,838 B1).

Milton et al. and Farries have been discussed above in regard to claims 6-10 and 12-21. The difference between Milton et al. and Farries and the claimed invention is that Milton et al. and Farries do not teach to use a plurality of thin-film filters for dropping the predetermined wavelength. Scobey et al. teaches in FIG. 2 a thin-film filter 116 that is designed for selecting to drop a particular wavelength. Canoglu et al. teaches in FIG. 1 to cascade a plurality of thin-film filter to drop a plurality of selected wavelength from a WDM system. Canoglu et al. teaches to use slidable filters. However, it is obvious to one of ordinary skill in the art that if the set of wavelength to be dropped is fixed, the filters can be fixed and electromechanical apparatus for sliding the filters are unnecessary. One of ordinary skill in the art would have been motivated to combine the teaching of Scobey et al. and Canoglu et al. with the modified optical node of Milton et al. and Farries to use cascaded thin-film filters to drop selected wavelength channels

from a plurality of bands because thin-film filter has low passband loss and low interchannel cross-talk. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use thin-film filters, as taught by Scobey et al. and Canoglu et al., in the modified optical node of Milton et al. and Farries because thin-film filter has low passband loss and low interchannel cross-talk.

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al., Farries and Scobey et al. as applied to claim 11 above, and further in view of Hutchison et al. (U.S. Patent 6,687,463 B1).

Milton et al., Farries and Scobey et al. have been discussed above in regard to claim 11 above. Regarding claim 4, the difference between Milton et al., Farries and Scobey et al. and the claimed invention is that Milton et al., Farries and Scobey et al. do not teach extra wavelengths for future growth. Hutchison et al. suggests in col. 1, line 34 that if extra-unused wavelengths are provided initially, future growth can be achieved without interruption. One of ordinary skill in the art would have been motivated to combine the teaching of Hutchison et al. with the modified optical node of Milton et al., Farries and Scobey et al. because providing extra-unused wavelength allows future growth to be achieved smoothly without interruption of service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide extra unused wavelength channels initially, as suggested by Hutchison et al., in the modified optical node of Milton et al., Farries and Scobey et al. because providing extra unused wavelength allows future growth to be achieved smoothly without interruption of service.

Regarding claim 5, Scobey et al. teaches to use thin-film filters for dropping selected wavelength channels.

8. Claims 6-10, 12-21, 26-32, 35-38, 40-44 and 46-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al. (U.S. Patent 6,084,694) in view of Nielsen et al. (U.S. Patent 6,559,988 B1).

Milton et al. has been discussed above in regard to claims 1-3, 22-24, 30-32, 39 and 45. The difference between Milton et al. and the claimed invention is that Milton et al. suggests dropping and adding a whole band of channels. Nielsen et al. teaches in FIG. 1, FIG. 2 and col. 1, lines 36-46 that in certain applications only selected channels from each band need to be dropped and added. This gives flexibility in assigning wavelength to optical paths among a large number of nodes in a complex network. One of ordinary skill in the art would have been motivated to combine the teaching of Nielsen et al. with the optical node of Milton et al. to only drop and add selected wavelength channels from/to a plurality of bands because this approach eliminates unnecessary equipment and reduce loss. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to drop and add only selected channels from/to a plurality of bands, as taught by Nielsen et al., in the optical node of Milton et al. to only drop and add selected wavelength channels from/to a plurality of bands because this eliminates unnecessary equipment and reduce loss.

Regarding claims 6-9, the combination of Milton et al. and Nielsen et al. teaches that any channels can be selected from any bands by including appropriate filters for the selected wavelengths.

Regarding claim 10, it is obvious to one of ordinary skill in the art to arrange the filters of Nielsen et al. in a circuit pack so that it can be installed in a rack suitable to be deployed in the field.

Regarding claim 12-14, the combination of Milton et al. and Nielsen et al. teaches that any channels can be selected from any bands by including appropriate filters for the selected wavelengths.

Regarding claim 15, the combination of Milton et al. and Nielsen et al. teaches to divide channels in a WDM system into express (pass-through) channels and drop channels, use appropriate filters to extract the selected drop channels and forward the express channel to the output fiber.

Regarding claims 16-21, 26-32, 35-38, 40-44 and 46-51, the combination of Milton et al. and Nielsen et al. teaches that any channels can be selected from any bands by including appropriate filters for the selected wavelengths. For example, if band A consists of λ_1-λ_4 and band B consists of λ_5-λ_8, Nielsen illustrates in FIG. 1 and FIG. 2 to drop and add two wavelengths from each band.

9. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al. and Nielsen et al. as applied to claims 6-10, 12-21, 26-32, 35-38, 40-44 and 46-51 above, and further in view of Hutchison et al. (U.S. Patent 6,687,463 B1).

Milton et al. and Nielsen et al. have been discussed above in regard to claims 6-10, 12-21, 26-32, 35-38, 40-44 and 46-51. The difference between Milton et al. and Nielsen et al. and the claimed invention is that Milton et al. and Nielsen et al. do not teach extra wavelengths for future growth. Hutchison et al. suggests in col. 1, line 34 that if extra-unused wavelengths are provided initially, future growth can be achieved without interruption. One of ordinary skill in the art would have been motivated to combine the teaching of Hutchison et al. with the modified optical node of Milton et al. and Nielsen et al. because providing extra-unused wavelength allows future

growth to be achieved smoothly without interruption of service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide extra unused wavelength channels initially, as suggested by Hutchison et al., in the modified optical node of Milton et al. and Nielsen et al. because providing extra unused wavelength allows future growth to be achieved smoothly without interruption of service.

Regarding claim 34, Nielsen et al. teaches in FIG. 1 and FIG. 2 thin-film filter 120 and thin film filter 220, respectively. Milton et al. teaches in FIG. 3 receiver 14 for converting optical signals to electrical signals.

Response to Arguments

10. Applicant's arguments filed 29 October 2004 have been fully considered but they are not persuasive.

In regard to the 102 rejection based on Milton et al., the Applicant argues that the present invention allows for the dropping a select portion of wavelengths from the entire set of wavelengths passing through the node. However, claims 1, 22, 30, 39 and 45 do not recite such feature. Instead, claim 1, e.g., recites "wherein said filter drops a fixed set of wavelengths at the node wherein the fixed set includes wavelengths from different bands". Milton et al. clearly indicates in FIG. 1 the dropping of a plurality of bands.

The Applicant argues that Hutchinson fails to disclose the adding and dropping of *a wavelength* in accordance with the present invention. However, such feature is not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the Farries reference, the Applicant argues that Farries only discloses the dropping of *an entire band of wavelengths from the optical signal.* The examiner disagrees. It is noted that the term "band of wavelengths" used by Farries means "the wavelength range" associated with a channel. For example, Farries recites in col. 5, lines 39-40 "The signal is then incident upon the grating $FGB_{\lambda 2}$, which reflects substantially most of the light energy at wavelengths within the band of channel 2." On the other hand, the term "band" used in instant application and Milton et al. means "a group of contiguous wavelength channels", which is referred to as "a group of multiplexed channels" in Farries (e.g., see col. 2, line 7). Noting the difference in the usage of the term "band", the teaching "dropping a channel n comprising a band of wavelengths of light centered about a wavelength λn" means dropping a single wavelength channel.

The Applicant further argues that Farries fails to teach accessing wavelengths from *different bands*. The Examiner disagrees. As explained in the rejection above, if each band consists of four channels, i.e., λ_1-λ_4 constitute band A, λ_5-λ_8 constitute band B and λ_9-λ_{12} constitute band C, Farries teaches in FIG. 7 a fixed wavelength set comprises one wavelength from each band. Farries also teaches in FIG. 7 a fixed wavelength set comprises a first wavelength from band B and a plurality of wavelengths from band A.

The Applicant argues that there is no motivation by one skilled in the art to combine Farries and Milton et al. The Examiner disagrees. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Farries teaches in col. 2, lines 5-9 that "Bragg gratings have been know[n] to be used in add-drop optical circuits, where it is desired to drop a particular channel from a group of multiplexed channels." Therefore, one of ordinary skill in the art would have been motivated to combine the teaching of Farries with the optical node of Milton et al. when only one or a few wavelength channels from a group of contiguous wavelength channels needed to be dropped, because the approach of Farries eliminates unnecessary equipment and reduce loss.

The Applicant argues that Milton teaches away from dropping individual discrete wavelengths. The Examiner disagrees. It is well known in the art that optical switching and adding/dropping can be done in a hierarchical or multi-granularity level. For example, Noirie et al. (L. Noirie et al., "Multi-Granularity Optical Cross-Connect", ECOC, 2000) teaches in FIG. 2 that adding/dropping and switching can be done in fiber level, band (i.e., group of channels) level and channel level. By choosing the appropriate level, one achieves optimal cost/performance. Milton teaches adding/dropping at the band level and Farries teaches adding/dropping at channel level. However, they do not exclude to each other. Instead, they are complementary to each other as taught by Noirie et al.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The Applicant argues that the present invention teaches the dropping of a predetermined wavelength as opposed to the broad channel, which contains a plurality of wavelength, as disclosed by Scobey. However, nowhere does Scobey teach broad channel. Instead, Scobey et al. teaches in FIG. 2 the use of thin-film filter 116 for dropping a predetermined wavelength. For example, Scobey et al. recites in col. 6, lines 35-37 "The device shown in FIG. 2 does not demultiplex all channels as with conventional demultiplexers, but rather drops a selected channel from the optical signal."

Regarding claims 4 and 5, the Applicant argues that Milton, Farries and Scobey fail to teach claim 1, on which claims 4 and 5 depend. As explained above, Milton teaches limitations of claim 1.

Regarding claims 6-10, 12-21, 26-32, 35-38, 40-44 and 46-51, the Applicant argues that Nielsen and Milton fail to teach each element of independent claims 1, 10, 15, 30, 39 and 45. However, Milton teaches each element of independent claims 1, 30, 39 and 45 as explained above and the combination of Milton and Nielsen, considered as a whole, teaches claims 6-10, 12-21, 26-32, 35-38, 40-44 and 46-51.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
8 April 2005

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